AL'TSHULER, M.A.; TARAN, P.N.

Increasing labor productivity in the Frunze mine. Gor.shur.no.3: 10-13 Mr '56. (MLRA 9:7)

1.Glavnyy inzhener rudoupravleniya imeni Frunze (for Al'tshuler).
2.Glavnyy inzhener tresta Leninruda (for Taran).
(Frunze--Iron mines and mining)

TARAN, P.N.

Use of butyl acetate to purify the waste liquors of aniline dye factories. A. M. Koganovskii and P. N. Taran (Inst. Gen. and Inorg. Chem. Acad. Sci. Ukr. S.S.R., Kiev). *Ukrain. Khim. Zhur.* 22, 401–4(1956)(in Russian). The following partition coeffs. between BuOAc and neutral H_2O are reported: BzOH, 30; PhOH, 50; *o*-$HOC_6H_4CO_2H$, 120; *o*-$H_2NC_6H_4OH$, 2.6; *p*-$O_2NC_6H_4OH$, 215; *o*-$O_2NC_6H_4OH$, 191; 2,4-$H_2N(O_2N)C_6H_3OH$, 42; *p*-$O_2NC_6H_4OH$, 30; $PhNH_2$, 27; *o*-$MeC_6H_4NH_2$, 53. Extn. with BuOAc might be used to purify waste waters, useful products being reclaimed. The soln. must be neutral or $PhNH_2$ will not be extd.

John Howe Scott

TARAN, P.N., gornyy inzhener; RYBAK-YATSENKO, A.I., gornyy inzhener.

Efficient method of developing new levels in Krivoy Rog mines.
Gor. zhur. no.7:13-15 Jl '57. (MLRA 10:8)

1. Trest Leninruda.
(Krivoy Rog--Iron mines and mining)

73-2-19/22

AUTHORS: Koganovskiy A.M., Rovinskaya T.M. and Taran, P.N.

TITLE: Oxidation of thiosulfate and sulphide in aqueous solutions on aeration in the presence of pyrolusite. (Okisleniye tiosul'fata i sul'fida v vodnykh rastvorakh pri aeratsii v prisutstvii pirolyuzita).

PERIODICAL: "Ukrainskiy Khimicheskiy Zhurnal" (Ukrainian Journal of Chemistry), Vol.23, No.2, March-April, 1957, pp.256-265 (USSR).

ABSTRACT: Thiosulphate is one of the strongest oxidation inhibitors for sulphate solutions. It oxidises on pyrolusite simultaneously with the sulphite; in the absence of pyrolusite no oxidation of the thiosulphate by air-oxygen occurs. The catalytic oxidation of dilute solutions of sulphite, thiosulphate and sulphide and their mixtures with the aid of air-oxygen is of paramount importance for the aniline-dye and oil industries (waste waters). A detailed investigation of the kinetics of the reaction showed that in the presence of pyrolusite and 30-35 minute-aeration quantitative oxidation of thiosulphate solutions is achieved (at concentrations not exceeding 50 mg-equ./l). Oxidation proceeds at a greater rate in an acid medium and at a slower rate in alkaline media

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Oxidation of thiosulfate and sulphide in aqueous solutions on aeration in the presence of pyrolusite. (Cont.)

(pH 11 - 12), (Diagrams 1-3). In both media the reaction is of the first order. Only 30% of sulphur passes into the sulphate, the remainder being found in the form of polythionates. The quantity of thiosulphate oxidising up to the poisoning of the pyrolusite is independent of the initial concentration of the solution is constant/unit weight for the same catalyst. Faster oxidation of sulphides by aeration in the presence of pyrolusite occurs. The main produce is thiosulphate, sulphate and a small quantity of polythionates. The oxidation of a mixture of sulphate, thiosulphate and sulphide is more intensive than the oxidation of the separate components because of the interaction of these substances amongst themselves and with the reaction products. The aeration of the solutions on pyrolusite can be utilised for the purification of sulphur-contaminated effluents of chemical plants producing organic chemicals. Experiments were carried out in a 30 mm diameter glass column filled with pyrolusite granules (480 g) previously activated with 5% H_2SO_4. Onto this 200 ml thiosulphate solution was poured and air was

Oxidation of thiosulfate and sulphide in aqueous solutions on aeration in the presence of pyrolusite. (Cont.)

bubbled through at a velocity of 127 l/hour. HCl or alkali was added to achieve changes in pH. The relation of time of practically complete breakdown of thiosulphate during the aeration of the solutions is tabulated. (Table 1). Table 2 gives the dependence of the composition of the oxidation products of thiosulphate on the pH of the solution. The effect of poisoning of the pyrolusite on the composition of the oxidation products is shown in Table 4.

There are 3 diagrams, 9 tables and 15 references, 4 of which are Slavic.

ASSOCIATION: Institute of General and Inorganic Chemistry, Academy of Sciences, Ukraine. (Institut Obshchey i Neorganncheskoy Khimii AN USSR).

SUBMITTED: June 19, 1956.

AVAILABLE: Library of Congress

Card 3/3

TARAN, P.N., Cand Tech Sci — (diss) "Study of methods for opening and preparing mine floors in mining ~~ore deposits~~ the Krivbass." Dnepropetrovsk, 1959, 20 pp (Min of Higher Education UkSSR. Dnepropetrovsk, Order of Labor Red Banner Mining Inst im Artem) 100 copies (KL, 36-59, 116)

NOVOZHILOV, M.G., prof., doktor tekhn.nauk; KUCHERYAVYY, F.I., kand.tekhn. nauk; TARAN, P.N., kand.tekhn.nauk

"Boring and blasting operations" by V.V.Nedin, Sh.I.Ibraev. Reviewed M.B.Novozhilov, F.I.Kucheriavyi, P.N.Taran. Gor. zhur. no.2:77-78 F '61. (MIRA 14:4)

1. Dnepropetrovskiy gornyy institut (for Kucheryavyy). 2. Trest Leninruda, Krivoy Rog (for Taran).
(Boring) (Blasting) (Nedin, V.V.)
(Ibraev, Sh.I)

TARAN, P.N., kand.tekhn.nauk

Consolidated data on tapping and developing horizons in mines of the Krivoy Rog Basin. Gor. zhur. no.10:43-45 O '61. (MIRA 15:2)

1. Glavnyy inzh. tresta Leninruda.
(Krivoy Rog Basin--Iron mines and mining)

KHIVRENKO, A.F.; TARAN, P.N.

Increasing the output and improving the quality of iron ores of the Krivoy Rog Basin. Gor. zhur. no.11:5-6 N '61. (MIRA 15:2)

1. Glavnyy inzh. tresta Dzerzhinskruda (for Khivrenko). 2. Ispolnyayushchiy obyazannosti upravlyayushchego trestom Leninruda (for Taran).

(Krivoy Rog Basin--Iron mines and mining)

BUD'KO, A.V.; BOGDANOV, G.I.; TARAN, P.N.; LEVITSKIY, D.Z.

Study and improvement of chamber systems with mass pillar caving in the Krivoy Rog Basin. Gor.zhur. no.4:24-29 Ap '62. (MIRA 15:4)

1. Institut gornogo dela im. Skochinskogo (for Bud'ko, Bogdanov).
2. Trest Leninruda, Krivoy Rog (for Taran, Levitskiy).
(Krivoy Rog Basin---Iron mines and mining)

TARAN, P.N., kand.tekhn.nauk (Krivoy Rog); MIKHAYLOV, Yu.I., kand.tekhn. nauk (Krivoy Rog); SIMFOROV, G.Ye., gornyy inzh. (Krivoy Rog)

Improving methods of tapping ore deposits at great depths. Gor.zhur. no.5:23-25 My '62. (MIRA 16:1)
(Krivoy Rog Basin--Iron mines and mining)
(Conveying machinery)

TARAN, P.N., kand.tekhn.nauk; MIKHAYLOV, Yu.I., kand.tekhn.nauk

Complete automation of mine haulage. Gor. zhur. no.12:21-25 D '62. (MIRA 15:11)

(Mine haulage) (Automation)

TARAN, Pavel Nikiforovich; TARASOV, L.Ya., otv. red.; YEROKHIN, G.M., red.izd-va; LAVRENT'YEVA, L.G., tekhn. red.; IL'INSKAYA, G.M., tekhn. red.

[Practice of opening up and developing horizons in working ore deposits] Opyt vskrytiia i podgotovki gorizontov pri razrabotke rudnykh mestorozhdenii. Moskva, Gosgortekhizdat, 1963. 50 p. (MIRA 16:5)
(Krivoy Rog Basin--Mining engineering)

LAZAN, P.N., kand. tekhn. nauk; VOL'FSON, F.M., kand. tekhn. nauk; VOLOSIN, A.F., kand. tekhn. nauk; TEGTER, Yu.B., gornyy inzh.

Eliminate multiple horizon mining in the Krivoy Rog basin. Gor. zhur. no.4:3-6 Ap '65. (MIRA 18:5)

1. Nauchno-issledovatel'skiy gornorudnyy institut, Krivoy Rog.

KOGANOVSKIY, A.M.; TARAN, P.N.

Oxidation of sulfite aqueous solutions by aeration. Ukr.khim.zhur. 21 no.4:472-479 '55. (MLRA 9:2)

1.Institut neorganicheskoy khimii AN USSR.
(Sodium sulfites) (Factory and trade waste) (Oxidation)

KOGANOVSKIY, A.M.; TARAN, P.M.

Use of butyl acetate in the purification of aniline-dye industrial effluents. Ukr.khim.zhur.22 no.3:401-404 '56. (MIRA 9:9)

1.Institut obshchey i neorganicheskoy khimii AN USSR.
(Butyl acetate) (Coal-tar colors)

KOGANOVSKIY, A.M.; KOVINSKAYA, T.M.; TARAN, P.N.

Oxidation of thiosulfate and sulfide in aqueous solutions during aeration in the presence of pyrolusite. Ukr. khim. zhur. 23 no.3: 257-265 '57. (MLRA 10:6)

1. Institut obshchey i neorganicheskoy khimii Akademii nauk U[illegible].
(Oxidation) (Sulfides) (Thiosulfates)

BEKHER, P.M.; KOGANOVSKIY, A.M.; KRAYUKHINA, N.N.; MYSHKINA, N.P.; TARAN, P.N.; TROYANOV, I.A.; SHEYN, S.M.

Adsorption removal of aromatic compounds from the waste waters of aniline dye production. Ukr. khim. zhur. 27 no.2:268-273 '61. (MIRA 14:3)

1. Institut obshchey i neorganicheskoy khimii AN USSR i Rubezhanskiy filial Nauchno-issledovatel'skogo instituta organicheskikh poluproduktov i krasiteley.

(Salvage(Waste, etc.))
(Aromatic compounds)

SHEVCHENKO, M.A.; TARAN, P.N.

Study of the basic components of humus in water. Gidrokhim. mat. 35:149-155 '63. (MIRA 16:7)

1. Institut obshchey i neorganicheskoy khimii AN UkrSSR i Laboratoriya khimii tekhnologii vody, Kiyev.
(Humus--Analysis) (Water--Composition)

TARAN, Raisa, traktorlistka; SOSNITSKAYA, Vera [Sosnyts'ka, Vira]; GAYDUK, Mikola [Haiduk, Mykola], zvenevoy; SERDYUK, Tonay, zvenevaya

Beacon lights of the glory of the Communist Youth League. Znam. tu pratsia no.4:6-7 Ap '62. (MIRA 15:4)

1. Radgosp "Kermenchik" Velikonovosil'kivs'kogo rayonu Donets'koi oblasti (for Taran). 2. Zaviduyucha bibliotekoyu, sekretar komsomol's'koi organizatsii kolgospu im. Dzerzhins'kogo Tsurivs'kogo rayonu Volins'koi oblasti (for Sosnitskaya). 3. Komsomol's'ko-molodizhna lanka kolgospu im. XX z'izdu KPRS Malovilts'kogo rayonu Chernigivs'koi oblasti (for Gayduk). 4. Uchnivs'ka virobnichaya brigada Skorodistits'koi serednioi shkoli Chornobaivs'kogo rayonu na Cherkashchini (for Serdyuk).
(Ukraine--Corr (Hbiz))

TARAN, S.A.; GORBATENKO, V.G.

Automatic machine for straightening and cutting copper busbars.
Biul.tekh.-ekon.inform.Gos.nauch.-issl.inst.nauch.i tekh.inform.
17 no.7:45-46 Jl '64. (MIRA 17:10)

1. MARAN T.V.

2. USSR (600)

4. Ukraine-Wheat

7. Scientific practices in spring wheat cultivation in the steppes of the Ukrainian SSR, Sov.agron. 11 no.2, 1953.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

TARAN, V., inzhener.

Unusual aircrafts. Tekh. mol. 24 no.12:30-32 D '56. (MLRA 10:2)

(Flying machines)

TARAN, V., inzh.

Mail by rockets. IUn. tekh. 2 no.9:33 S '57. (MLRA 10:9)
(Rockets (Aeronautics)) (Postal service)

PHASE I BOOK EXPLOITATION SOV/5213

Akademiya nauk SSSR. Nauchnyedovetsnyy sovet po provedeniyu Mezhdunarodnogo geofizicheskogo goda. V. radiol programmy MGG: Ionosfera.

Issledovaniya neodnorodnostey v ionosfere (Investigations of Inhomogeneities in the Ionosphere) Moscow, Izd-vo AN SSSR, 1960. 96 p. 2,000 copies printed. (Series: Mezhdunarodnyy geofizicheskiy god, No. 4)

Resp. Ed. Ya.V. Kushnerevskiy and S.F. Mirkotan, Candidate of Physics and Mathematics; Ed.: Ye.P. Shchukina; Tech. Ed.: O.M. Gus'kova.

PURPOSE: This publication is intended for geophysicists. It will be of particular interest to researchers specializing in studies of the structure of the ionosphere and its effect on radio wave propagation.

COVERAGE: This collection of articles on the properties of ionospheric inhomogeneities was published by the IGY Committee of the AS USSR, as the fourth serial contribution to the Fifth Section of the IGY program (the Ionosphere). Individual articles deal with various types of ionospheric inhomogeneities and their drifts, a study of the state of polarization, and a method of correlation analysis of the measurements of inhomogeneities and drifts in the ionosphere. No personalities are mentioned. References follow individual articles. A brief English abstract is appended to each article.

TABLE OF CONTENTS:

AVAILABLE: Library of Congress

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Card 3/3

S/024/62/000/003/009/011
E140/E463

16,8000

AUTHORS: Yemel'yanov, S.V., Taran, V.A. (Moscow)

TITLE: On a class of automatic control systems with variable structure

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Energetika i avtomatika, no.3, 1962, 183-188

TEXT: The author refers to A.M.Letov's demonstation (Avtomatika i telemekhanika, v.18, no.7, 1957) that the quality of an automatic control system can be improved substantially by change of sign of the controller velocity at a certain instant of time chosen so that the generating point in the phase space finds itself on a certain hyperplane, with absence of motion corresponding to a real positive root. Unfortunately present technical possibilities do not permit such systems to be realized and inexactness in determining the instant of switching leads to instability. The author seeks a similar system, having the advantages of conditionally stable systems, without their disadvantages. It is necessary to select a switching hyperplane

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such that it pass through the origin of coordinates, be sufficiently close to the Letov hyperplane and with the phase velocity vectors in its vicinity everywhere directed towards it. Then the generating point will move in slipping mode on the hyperplane and with small deviations away from it will always return to it. In such cases the quality of transient processes will be almost that of the conditionally stable system without the need for exact incidence of the generating point on the hyperplane. The author considers successively stability over the entire hyperplane and the conditions of incidence on the hyperplane for arbitrary initial conditions.

SUBMITTED: March 20, 1962

S/103/63/024/001/003/012
D201/D308

9.3280

AUTHORS: Yemol'yanov, S. V. and Taran, V. A. (Moscow)

TITLE: Lag networks in the design of a class of automatic control systems with variable structure. I

PERIODICAL: Avtomatika i telemekhanika, v. 24, no. 1, 1963, 33-46

TEXT: The authors show, on the example of control of a neutral object by means of a regulator with zero position error, that the system can be stabilized by replacing the differentiating units by lag networks: they also analyze such a system by representing its motion in a three-dimensional phase space x, $\dot{x}$, θ and by its projections on planes $x\dot{x}$ and $x\theta$ (where θ is the signal at the input of the lag network). In the system analyzed the switching network (Ψ - network) is that suggested by S. V. Yemel'yanov (Avtomatika i telemekhanika, v. 20, no. 7, 1959). The theoretical analysis of the motion for arbitrary initial conditions makes it possible to determine the parameters of the lag network as dependent on the parameters of the system. The analysis of the motion in the three-

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Lag networks in ... S/103/63/024/001/003/012
D201/D308

dimensional phase space allows further recalculation of the lag network parameters if optimum transient is to be achieved. There are 11 figures.

SUBMITTED: April 23, 1962

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S/280/63/000/001/016/016
E140/E435

AUTHORS: Yemel'yanov, S.V., Taran, V.A. (Moscow)

TITLE: A method for stabilizing automatic control systems with alternating (variable) structure without use of the error signal derivatives

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Tekhnicheskaya kibernetika. no.1, 1963, 155-171

TEXT: The systems studied have two different corrective filters depending on the sign of the error signal. The system studied in the present note is of second order and it is shown that the use of switched inertial linear filters gives results similar in quality to those obtained with other types of structure variation, without use of the first derivative of the error signal in the control function. Relations are obtained for the establishment of the filter parameters. If the filter time constant is reduced the system dynamics are improved but the switching system must be more sensitive. The system can realize transients without overshoot or with a single overshoot. The range of initial

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L 4696-63
A method for stabilizing ... S/280/63/000/001/016/016
E140/E435

conditions for which no overshoot occurs can be as great as in systems with derivative control. There are 9 figures.

SUBMITTED: June 12, 1962

lt/ad
Card 2/2

S/103/63/024/002/008/020
D201/D308

AUTHORS: Yemel'yanov, S.V. and Taran, V.A. (Moscow)

TITLE: Application of lag elements to the design of a class of variable structure regulators. II

PERIODICAL: Avtomatika i telemekhanika, v. 24, no. 2, 1963, 193-201

TEXT: The authors consider: 1) the choice of parameters of the lag element producing not more than one overshoot at any initial conditions, 2) the possibility of extending the range of initial conditions with no overshoot in the system, and 3) the monotonicity of the transient. Conclusions: 1) In designing automatic regulators of variable structure it is possible to use the error signal as transformed by either a lag or a lagless element. The parameters of the lag element have to satisfy certain conditions derived in part I and II of the work. 2) A decrease of the time constant of the lag element imposes the system dynamics but requires a more sensitive switching arrangement. 3) It is possible, depending on initial conditions,

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Application of lag elements ...

to design a system either with a monotonic transient or with one overshoot only. The range of initial conditions for which the response has no overshoots may be extended if the switching is controlled either by the error itself or by its derivative. All results were checked on ИПТ-5 (IPT-5) analog computer and proved to be in agreement with the theoretical analysis. There are 5 figures and 1 table.

SUBMITTED: May 26, 1962

Card 2/2

YEMEL'YANOV, S.V. (Moskva); TARAN, V.A. (Moskva)

Addition to E.I. Gerashchenko's article. Izv. AN SSSR. Tekh. kib. no.4:164 Jl-Ag '63. (MIRA 16:11)

YEMEL'YANOV, S.V. (Moskva); TARAN, V.A. (Moskva)

Use of commutating phase-shifting filters in an automatic control system with variable structure. Izv. AN SSSR. Tekh. kib. no.5:164-170 S-O '63. (MIRA 16:12)

BRUDNIK, S.S.; TARAN, V.A.

Practical methods for the determination of optimum reliability. Priborostroenie no.7:23-25 Jl '63. (MIRA 16:9)

SHIRYAYEV, V.I.; TARAN, V.A.; CHERNIN, E.A.; MYSOVSKIY, V.S., dots. kand. tekhn. nauk, retsenzent

[Principles of automation in foundry practice and the control and measurement equipment] Osnovy avtomatizatsii liteinogo proizvodstva i kontrol'no-izmeritel'nye pribory. Moskva, Mashinostroenie, 1964. 154 p. (MIRA 17:12)

1. Moskovskiy avtomekhanicheskiy institut (for Mysovskiy).

TARAN, V.A. (Moskva)

Use of nonlinear correction and variable structure for inproving the dynamic properties of automatic control systems. Avtom. i telem. 25 no.1:140-149 Ja '64. (MIRA 17:2)

ACCESSION NR: AP4041463 S/0103/64/025/006/0881/0886

AUTHOR: Yemel'yanov, S. V.; Taran, V. A. (Moscow)

TITLE: Stabilising the variable-structure automatic-control system by inertial units with a variable time constant

SOURCE: Avtomatika i telemekhanika, v. 25, no. 6, 1964, 881-886

TOPIC TAGS: automatic control, automatic control theory, variable structure automatic control

ABSTRACT: In the authors' previous works (referenced in the article), it was shown that instead of using an error-signal derivative, the error signal may be transformed by an inertial (relaxation) unit, the time constant T of the unit being limited by stability and transient-response conditions. Shortening the time constant makes the system more sensitive to the variation of parameters of the correcting units. The limitations imposed on T can be alleviated by step-changing

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ACCESSION NR: AP4041463

the transfer factor of the inertial unit simultaneously with changing the system structure. In the present article, another correction method is suggested for desensitising an automatic-control system. This method involves a step-changing of the time constant T of the inertial unit. The dynamics of a second-order free-migrating system is investigated. The domain of existence and the equation of motion of the sliding mode are considered, as well as conditions of stability and aperiodic motion. The step-time-constant method is recommended for the case when $1 - \lambda T > 0$ (with high values of λ) is the fundamental limitation. For the general case, a switching of both the gain and the inertial-unit time constant is recommended. Orig. art. has: 3 figures and 34 formulas.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00

SUB CODE: DP, IE NO REF SOV: 003 OTHER: 000

Card 2/2

L 16404-65 EWT(d)/EPF(n)-2/EWP(1) Po-4/Pq-4/Pg-4/Pae-2/Pu-4/Pk-4/P1-4
IJP(c)/ESD(dp)/AEDC(a)/SSD/ASD(a)-5/AFMDC/AFETR/AFTC(p)/RAEM(a) WW/BC

ACCESSION NR: AP4047573 S/0103/64/025/010/1421/1432

AUTHOR: Taran, V. A. (Moscow) B

TITLE: Controlling a linear plant by a variable-structure astatic controller without using pure derivatives in the control law. Part 1

SOURCE: Avtomatika i telemekhanika, v. 25, no. 10, 1964, 1421-1432

TOPIC TAGS: automatic control, automatic control design, automatic control system, automatic control theory 9

ABSTRACT: The response of a 3rd order automatic-control system to a step signal and some features of the system motion are considered; the structure of the phase space is investigated. The possibility of using inertial units instead of differentiating units is demonstrated. These findings are formulated: (1) When inertial-differential-unit signals, instead of pure derivatives, are used in a logical system, the phase trajectory is represented by a broken line consisting of

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segments of the trajectories of the first and second structures; (2) Beginning from a certain moment, the state point will travel in the vicinity of the A-hyperplane; (3) When the inertia of the differentiators decreases, the phase trajectory contracts toward the A-plane until a sliding motion in the A-plane takes place; (4) This sliding motion must be stable in order to ensure the stability of the system; (5) Meeting the conditions for bringing the state point into the sliding plane and the condition of stable motion in the sliding plane (if the latter registers with the A-plane) ensures placement of the state point in the A-plane under any initial conditions. Orig. art. has: 2 figures and 68 formulas.

ASSOCIATION: none

SUBMITTED: 10Jun63 ENCL: 00

SUB CODE: IE NO REF SOV: 005 OTHER: 000

Card 2/2

L 17552-65 EWT(d)/EPF(n)-2/EWP(1) Po-4/Pq-4/Pg-4/Pae-2/Pu-4/Pk-4/Pl-4 SSD/
AEDC(a)/AFMD(c)/ASD(a)-5/AFETR/AFTC(p)/RAEM(a)/RAEM(d)/ESD(dp)/IJP(c) WW/BC

ACCESSION NR: AP5000148 S/0103/64/025/011/1558/1565

B

AUTHOR: Taran, V. A. (Moscow)

TITLE: Controlling a linear plant by a variable-structure astatic controller without using pure derivatives in the control law. Part 2

SOURCE: Avtomatika i telemekhanika, v. 25, no. 11, 1964, 1558-1565

TOPIC TAGS: automatic control, automatic control design, automatic control system, automatic control theory

ABSTRACT: The behavior of the state point in the vicinity of an A-hyperplane and the state point's falling into the pull-in region are theoretically investigated. As the phase trajectories are included in a region of space bounded by two planes, stability conditions of the system are explored. The behavior of an equivalent on-off system under self-oscillation conditions is analyzed. Finally, conditions of a minimum number of overcontrols are determined: free oscillations of the filter must decay more quickly than the partial transient process which corresponds to

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L 17552-65
ACCESSION NR: AP5000148

the least root of equation 1.1 with $U = U_1$ or $U = U_2$ (see V. A. Taran in "Avt. i Telemekhanika, v. 25, no. 10, 1964). Orig. art. has: 1 figure and 41 formulas.

ASSOCIATION: none

SUBMITTED: 26Jul63 ENCL: 00

SUB CODE: IE NO REF SOV: 003 OTHER: 000

Card 2/2

BRUDNIK, S.S., inzh.; KUSOV, I.F., inzh.; TARAN, V.A., kand. tekhn. nauk

Using computers for calculating optimum allowances for the parameters of an executive component in securing given reliability and minimum cost of production and operation. Priborostroenie no.4: 16-19 Ap '65. (MIRA 18:5)

L 60394-65 EWT(d)/EWP(v)/EWP(k)/EWP(h)/EWP(l) Pf-4

ACCESSION NR: AP5016976 UR/0280/65/000/003/0132/0138 16 B

AUTHOR: Yemel'yanov, (Moscow); Taran, V. A. (Moscow); Utkin, V. I. (Moscow)

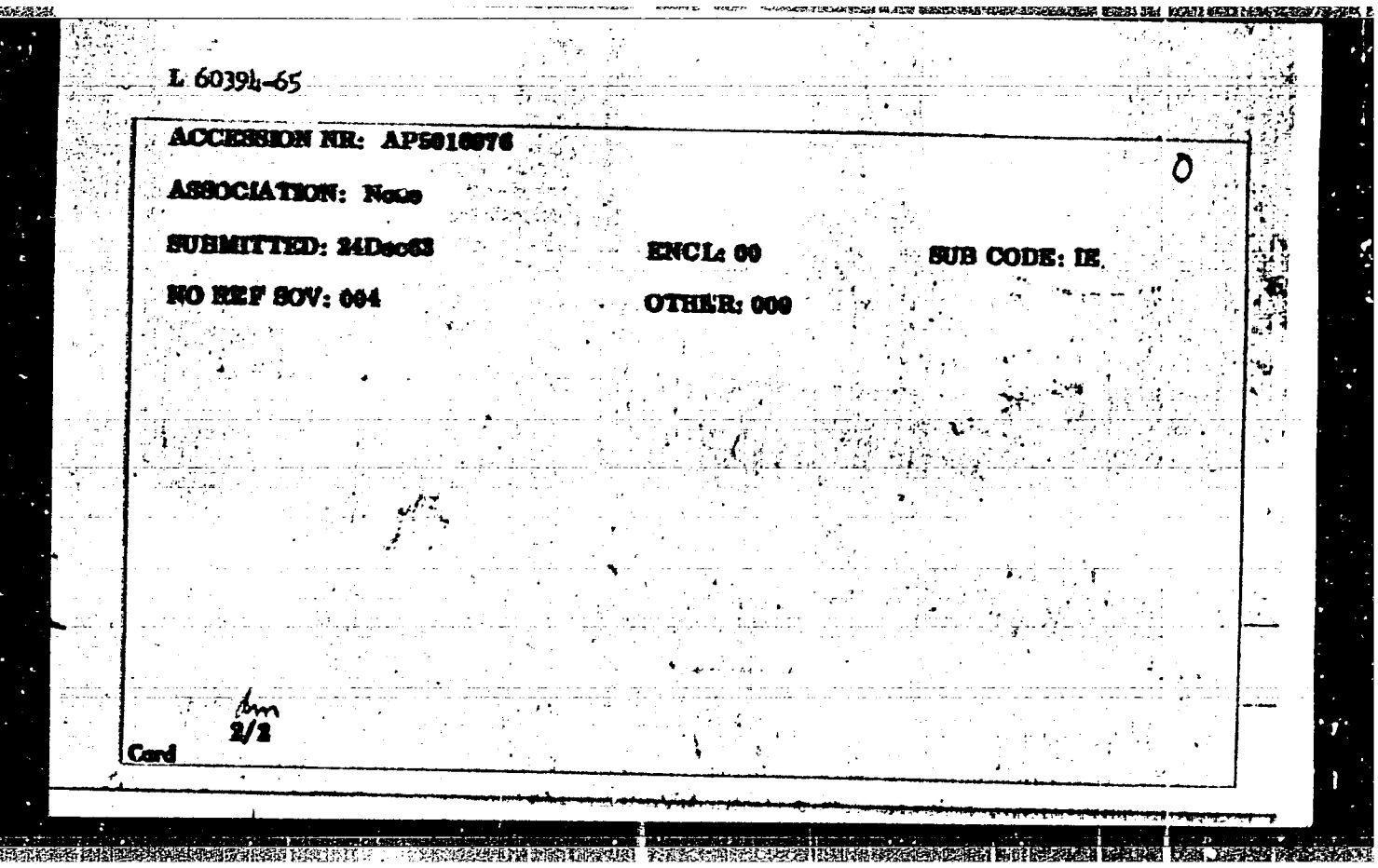
TITLE: The coincidence of representative points with the glide plane in systems with variable structure

SOURCE: AN SSSR. Izvestiya. Tekhnicheskaya kibernetika, no. 3, 1965, 132-138

TOPIC TAGS: variable structure system, glide plane motion, third order variable structure, optimum dynamic control, control theory

ABSTRACT: A third-order automatic control system with variable structure is discussed. It is assumed that within the phase space of the system's coordinates, there is a certain plane whose every point corresponds to gliding operation and that during such gliding motion of the system it exhibits remarkable dynamic properties. Consequently, to achieve a control which has the required quality indices, one must continuously secure the gliding operation of the system. The present paper formulates (in the form of a theorem) and proves the necessary conditions which must be satisfied in order that the representative point will remain located within the glide plane for arbitrary initial conditions. Orig. art. has: 36 formulas and 1 figure.

Card 1/2



L 60394-65

ACCESSION NR: AP5016976

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ASSOCIATION: None

SUBMITTED: 24Dec63 ENCL: 00 SUB CODE: IE

NO REF SOV: 004 OTHER: 000

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2/2

Card

L 2401-66 EWT(d)/EPF(n)-2/EWP(v)/EWP(k)/EWP(h)/EWP(l) IJP(c) WW/BC

ACCESSION NR: AP5022973 UR/0103/65/026/008/1336/1347
62-501:519.25

AUTHOR: Bermant, M. A. (Moscow); Yemel'yanov, S. V.; Taran, V. A. (Moscow)

TITLE: The motion of variable structure systems under sliding conditions

SOURCE: Avtomatika i telemekhanika, v. 26, no. 8, 1965, 1336-1347

TOPIC TAGS: phase shifter, filter, automatic control system, automatic control design

ABSTRACT: Numerous papers have dealt in recent years with variable-structure automatic control systems in which the structure and regulator parameters vary in accordance with a chosen law as a function of the state of the system. Such systems (as well as those with discontinuously varying parameters) are capable of operating under sliding conditions. The present paper develops a general approach to the study of the dynamics of systems with variable structural analysis of systems with infinite amplifications and of relay systems developed by M. V. Meyerov (Sintez struktur sistem avtomaticheskogo regulirovaniya vysokoy tochnosti, Fizmatgiz, 1959) and Ya. Z. Tsypkin (Teoriya releynykh sistem avtomaticheskogo regulirovaniya, Gostekhizdat, 1955). The authors discuss the choice of the

Card 1/2

L 2401-66

ACCESSION NR: AP5022973

switching function, the structural transformation of systems with variable structure the equations of motions of such systems under sliding conditions, the existence conditions for sliding operations, the independence of the sliding motion of the systems on the parameters of the object, the use of switching phase-shifting filters, the transformation of the structure of the switching filters, the conditions for the existence of the sliding operation of systems with variable parameters containing switching filters, and the types of transient processes during sliding operation. Results show that the use of structural transformation methods, based on the analogy between the systems with variable structure and relay systems under sliding conditions, leads to a significantly simplified treatment of the variable systems under sliding conditions. Orig. art. has: 71 formulas and 4 figures.

ASSOCIATION: None

SUBMITTED: 18Mar64 ENCL: 00 SUB CODE: IE

NO REF SOV: 012 OTHER: 000

Card 2/2

BERMANT, M.A. [illegible]; [illegible] (Moskva); KARAN, V.A. (Moskva)

[illegible] of a system with variable structure in a sliding [illegible]. Avtom. i telem. 26 no.8.1334-1347 Ag '65.
(MIRA 18:11)

TARAN, V.A. (Moskva)

Construction of automatic control systems using switched phase shifting filters. Izv. AN SSSR. Tekh. kib. no.4:174-182 Jl-Ag '65. (MIRA 18:11)

L 21977-66 EWP(k)/EWT(d)/EWP(h)/EWP(1)/EWP(v)

ACC NR: AP6007860 SOURCE CODE: UR/0103/66/000/002/0049/0055

AUTHOR: Taran, V.A. (Moscow) 53 B

ORG: none

TITLE: Linear plant control by means of a variable-structure astatic control without the use of "pure" derivatives in control law. Part 3

SOURCE: Avtomatika i telemekhanika, no. 2, 1966, 49-55

TOPIC TAGS: linear automatic control, automatic control theory, automatic control system

ABSTRACT: This article is an extension of results obtained in Parts 1 and 2 (Avtomatika i telemekhanika, v. XXV, no. 10, 1964; Avtomatika i telemekhanika, v. XXV, no. 11, 1964) to systems of the n-th order, i.e., an investigation of the influence of the inertia of differentiators on the dynamics of the variable-structure control system and the selection of the control law. It is found that for the design of highly efficient variable-structure automatic control systems use can be made of signals from passive filters and inertia differentiators instead of the effects from error derivatives. The properties of

Card 1/2 UDC: 62-50:519.25

L 21977-66

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real variable-structure automatic control systems are the closer to the properties of ideal systems the lower the value of the time constants of the denominators of transfer functions of differentiators or phase-shift filters. It is also found that the higher the speed of response of an ideal system the lower the tolerable values of time constants of phase-shift filters or differentiators. Orig. art. has: 3 figures and 22 formulas.

SUB CODE: 09, 13 / SUBM DATE: 28Jan64 / ORIG REF: 003

Card 2/2 nst

ACC NR: AR7000826 SOURCE CODE: UR/0272/66/000/010/0002/0002

AUTHOR: Taran, V. A.

TITLE: Method of limiting tests for determining reliability parameters of the functional units of a control system

SOURCE: Ref. zh. Metrologiya i izmeritel'naya tekhnika, Abs. 10.32.14

REF SOURCE: Tr. Mosk. in-ta elektron. mashinostr., vyp. 1, 1965(1966), 12-18

TOPIC TAGS: system reliability, automatic control system, test method

ABSTRACT: The principle of the method is explained. The procedure of limiting tests is described for the case of the vibrational load effect. It is noted that the method of testing the limit reliability reveals the "danger" zones. The proposed evaluation of unit failure from exceeding accuracy tolerances and not from mechanical breakdown makes it possible to retain the unit for further tests and to collect large enough statistics on failures for the same number of units. The method can be used for predicting the reliability of a unit under conditions which differ from operational conditions and to plan for the use of the unit in other systems. There are four illustrations and a bibliography of 2 titles. [Translation of abstract]

[DW]

SUB CODE: 13/14

Card 1/1 UDC: 620.179.019.3:62-112

ACC NR: AR7001757 SOURCE CODE: UR/0274/66/000/010/B099/B100

AUTHOR: Taran, V. A.; Brudnik, S. S.; Kusov, I. F.

TITLE: Optimization of tolerances for parameters of a device on condition that the assigned reliability, accuracy and minimum production and operation costs are maintained

SOURCE: Ref. zh. Radiotekhnika i elektrosvyaz', Abs. 10B695

REF SOURCE: Tr. Mosk. in-ta elektron. mashinostr., vyp. 1, 1965(1966), 184-192

TOPIC TAGS: system reliability, industrial production, tolerance optimization, production cost, operation cost, parameter

ABSTRACT: Experience in the development of instruments and various devices has shown that, from the standpoint of reliability and cost, the use of high-precision elements is not justified. Therefore, there arises the problem of the optimization of tolerances for changes in the functional parameters of devices, on condition that the assigned reliability and minimal costs are maintained. The optimization of tolerances for the alternation of the parameters of a closed control

Card 1/2 UDC: 621.396.6.019.3

ACC NR: AR7001757

system consisting of three units (amplifier, actuating mechanism, and feedback element) is investigated. The problem is solved on the basis of the method of linear programming and presuposes the determination of values of industrial tolerances for fluctuations in amplification and transmission factors at which the alternation of these parameters in time under the given operational conditions of the device makes it possible to ensure the required reliability of its operation and, at the same time, minimal production and operational costs. Six illustrations and a bibliography of 2 titles are included. [Translation of abstract]

[DW]

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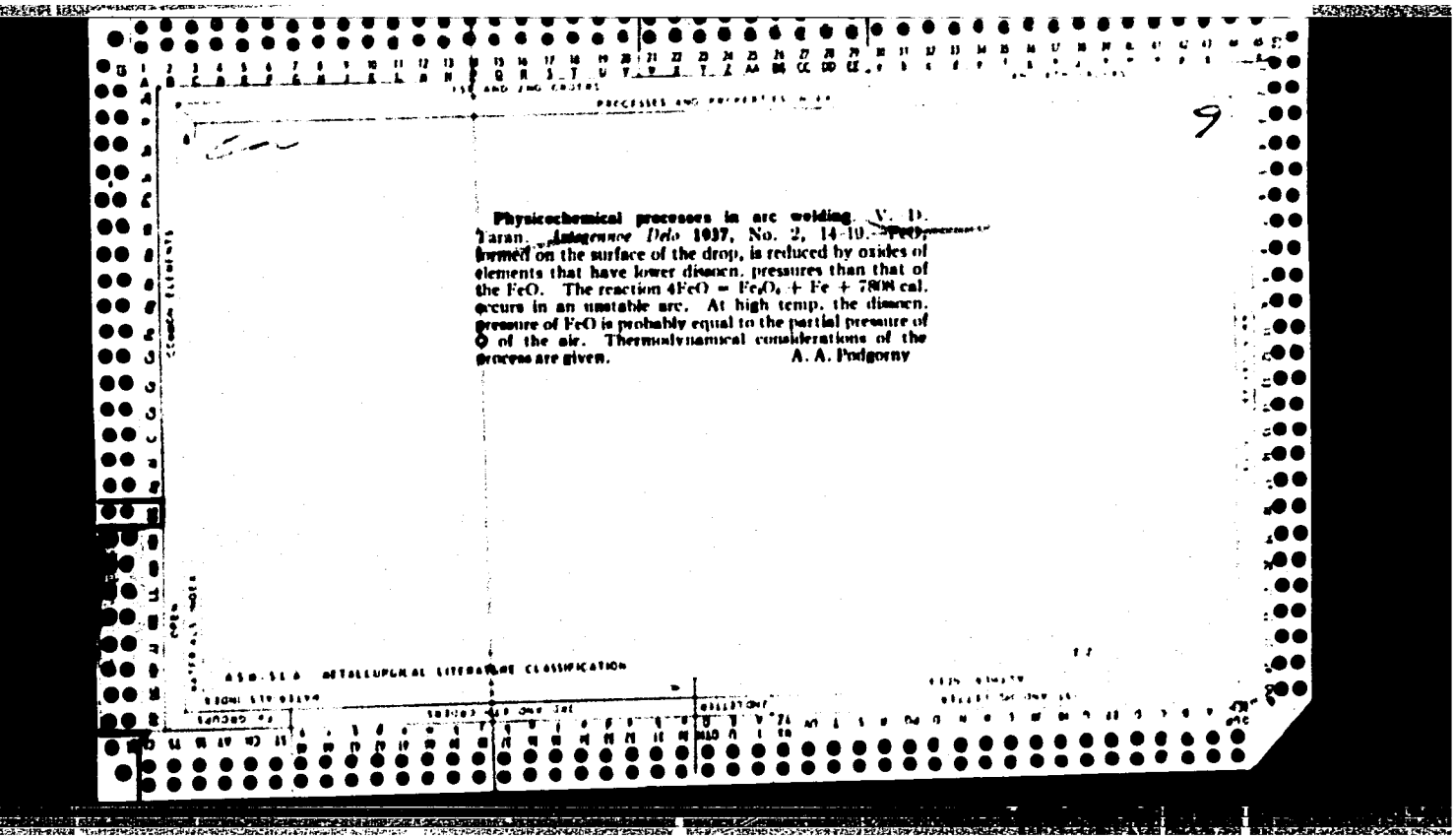
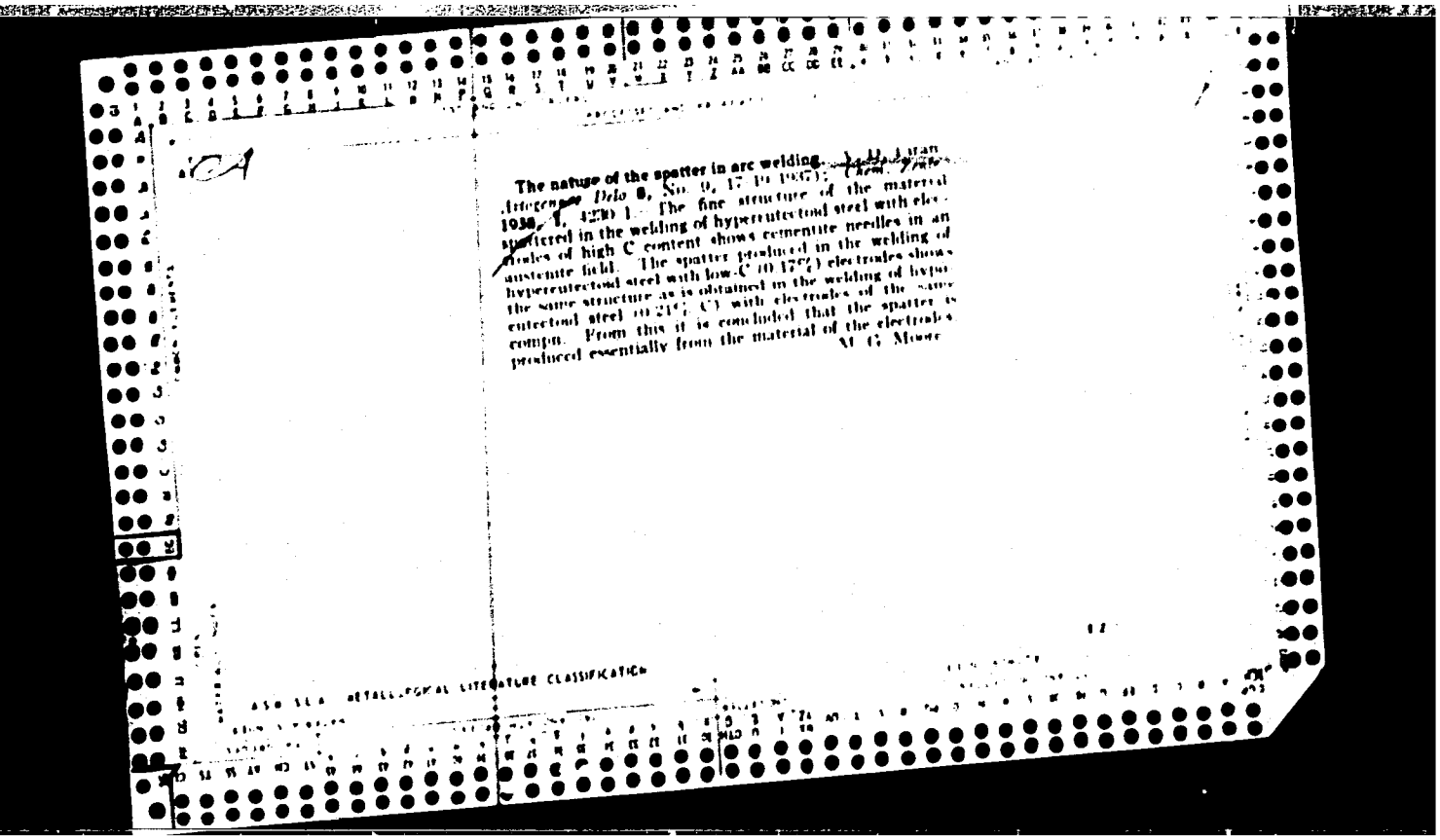
Card 2/2

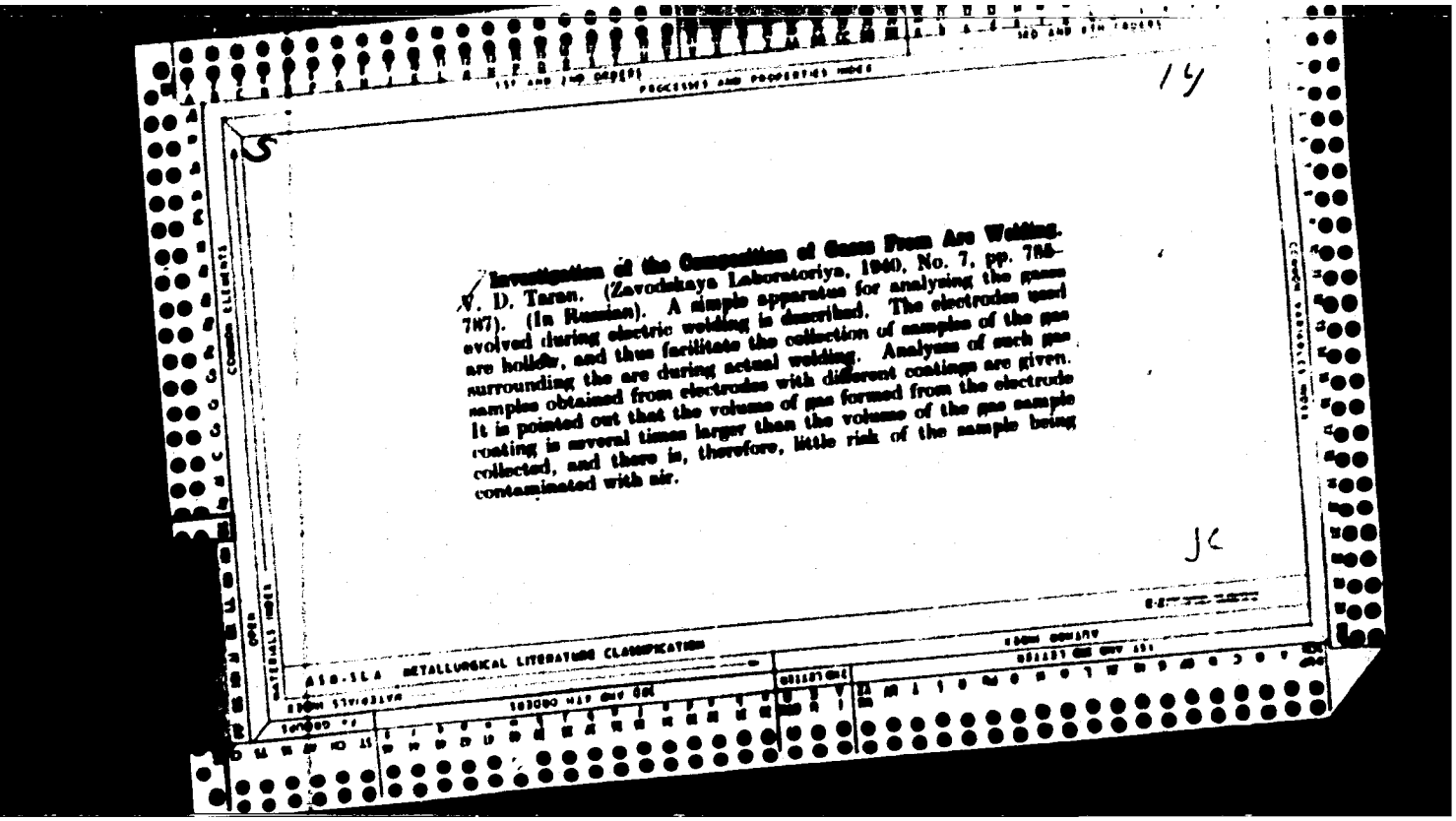


Physicochemical processes in arc welding. V. D. Taran. *Autogenous Data* 1937, No. 2, 14-10.—The FeO formed on the surface of the drop, is reduced by oxides of elements that have lower dissocn. pressures than that of the FeO. The reaction $4FeO = Fe_3O_4 + Fe + 7808$ cal. occurs in an unstable arc. At high temp. the dissocn. pressure of FeO is probably equal to the partial pressure of O of the air. Thermodynamical considerations of the process are given. A. A. Podgorny



The nature of the spatter in arc welding. [illegible]
[illegible] *Delo* **8**, No. 9, 17 pp. (1937); (Chem. Zentr. 1938, I, 4230). The fine structure of the material spattered in the welding of hypereutectoid steel with electrodes of high C content shows cementite needles in an austenite field. The spatter produced in the welding of hypereutectoid steel with low-C (0.12%) electrodes shows the same structure as is obtained in the welding of hypoeutectoid steel (0.21% C) with electrodes of the same compn. From this it is concluded that the spatter is produced essentially from the material of the electrodes.
M. G. Moser

ASM SEA METALLURGICAL LITERATURE CLASSIFICATION

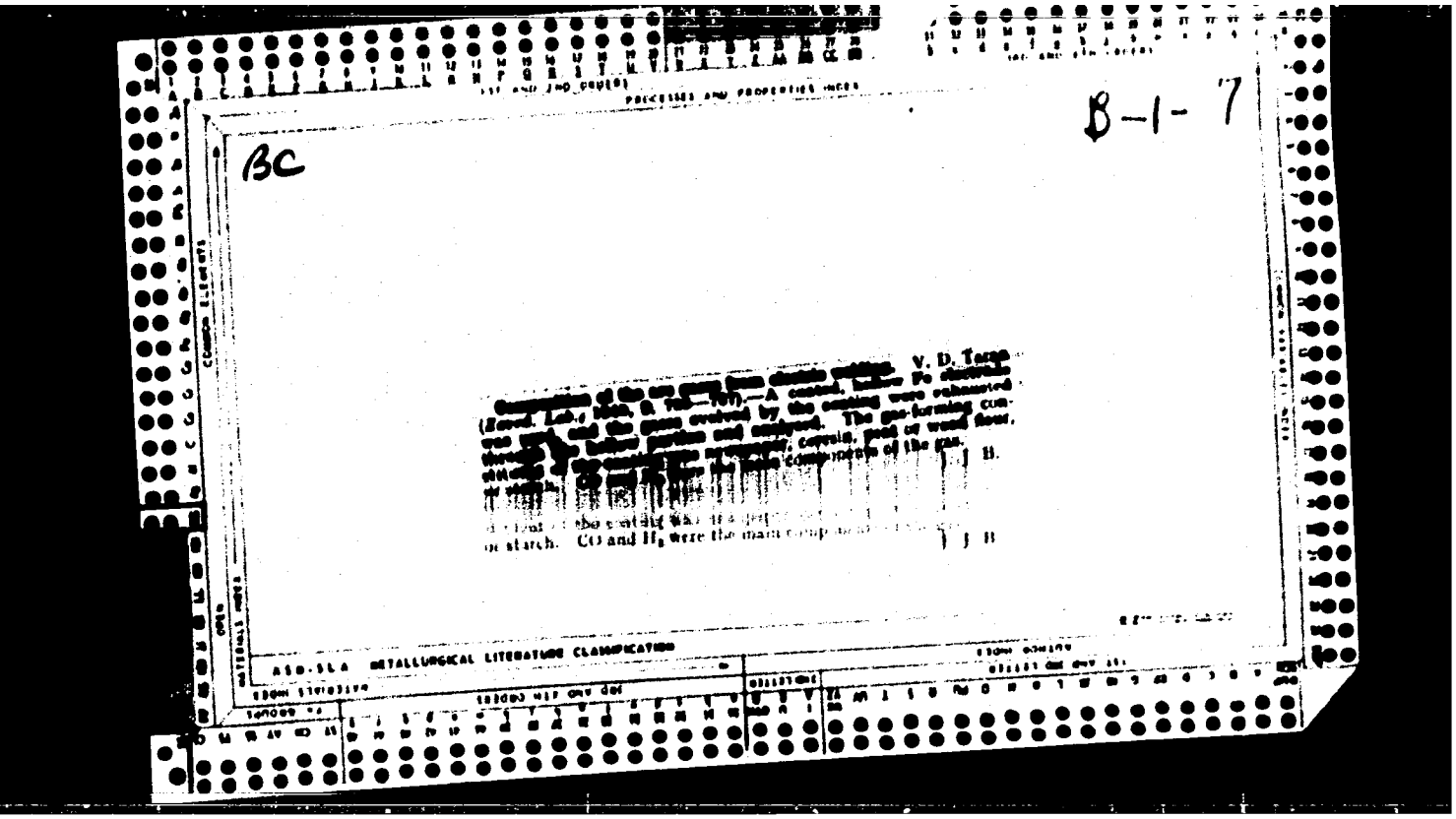


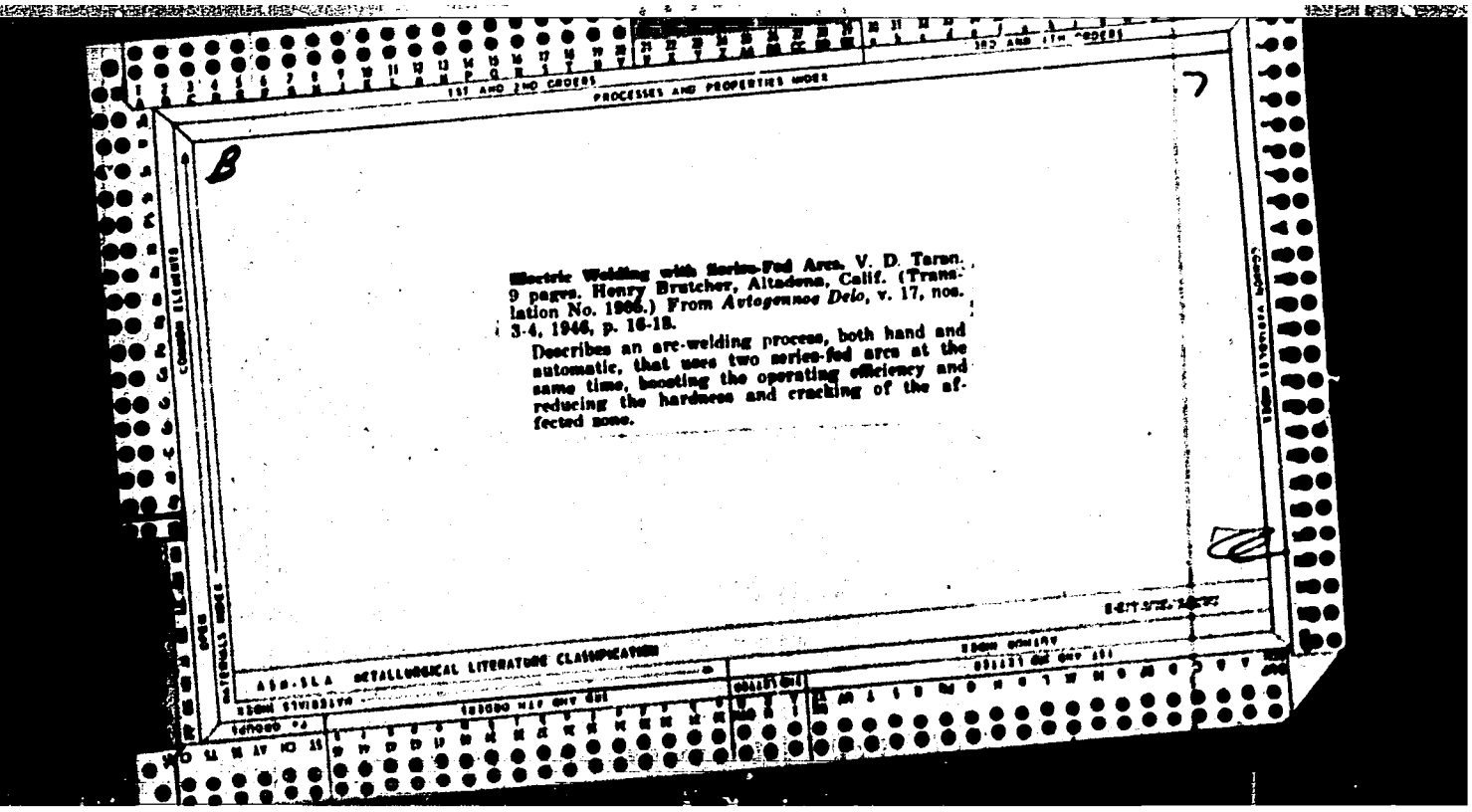
14

Investigation of the Composition of Gases From Arc Welding. V. D. Taran. (Zavodskaya Laboratoriya, 1940, No. 7, pp. 786-787). (In Russian). A simple apparatus for analysing the gases evolved during electric welding is described. The electrodes used are holder, and thus facilitate the collection of samples of the gas surrounding the arc during actual welding. Analyses of such gas samples obtained from electrodes with different coatings are given. It is pointed out that the volume of gas formed from the electrode coating is several times larger than the volume of the gas sample collected, and there is, therefore, little risk of the sample being contaminated with air.

JC

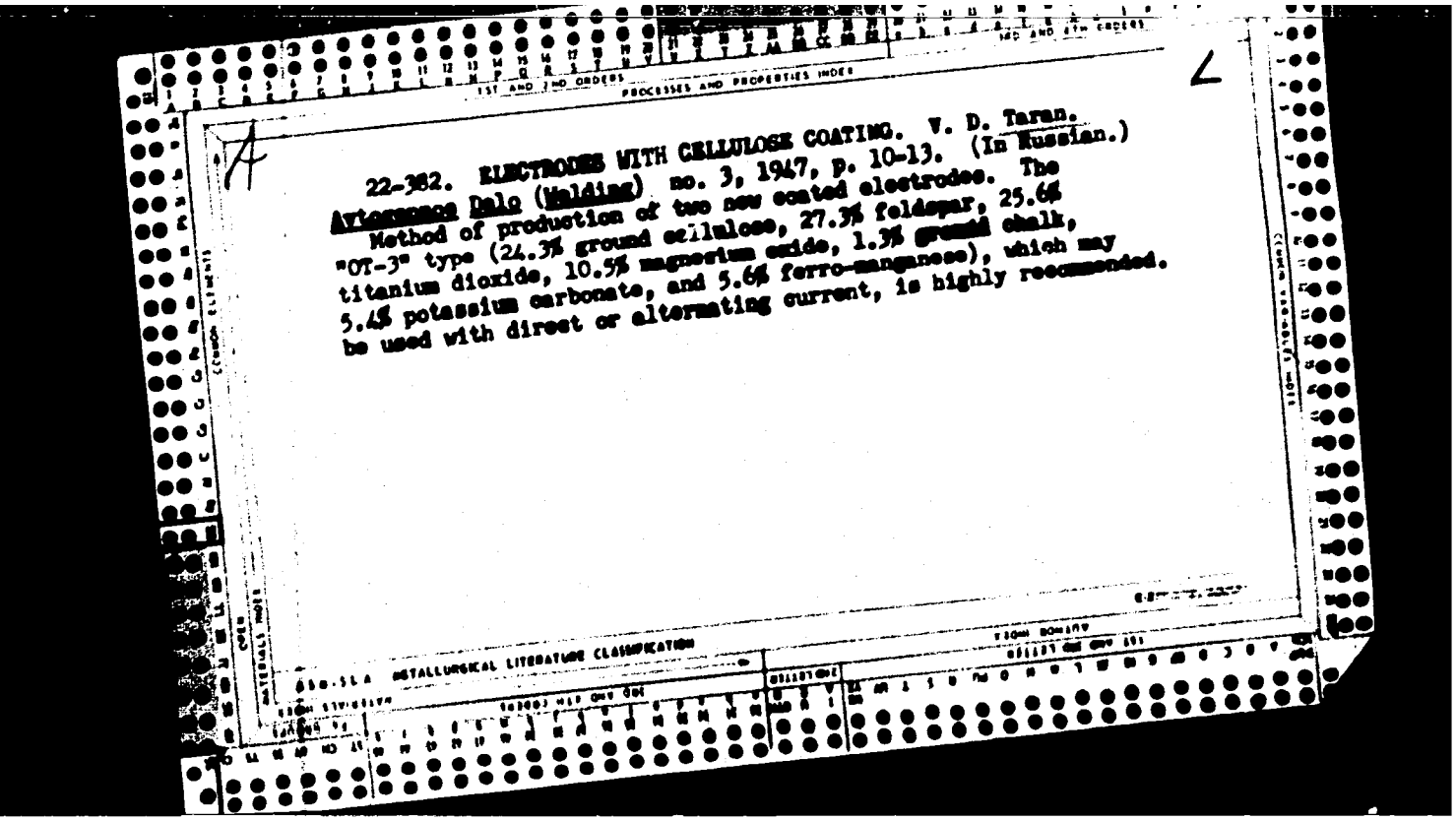
A10-5L4 METALLURGICAL LITERATURE CLASSIFICATION



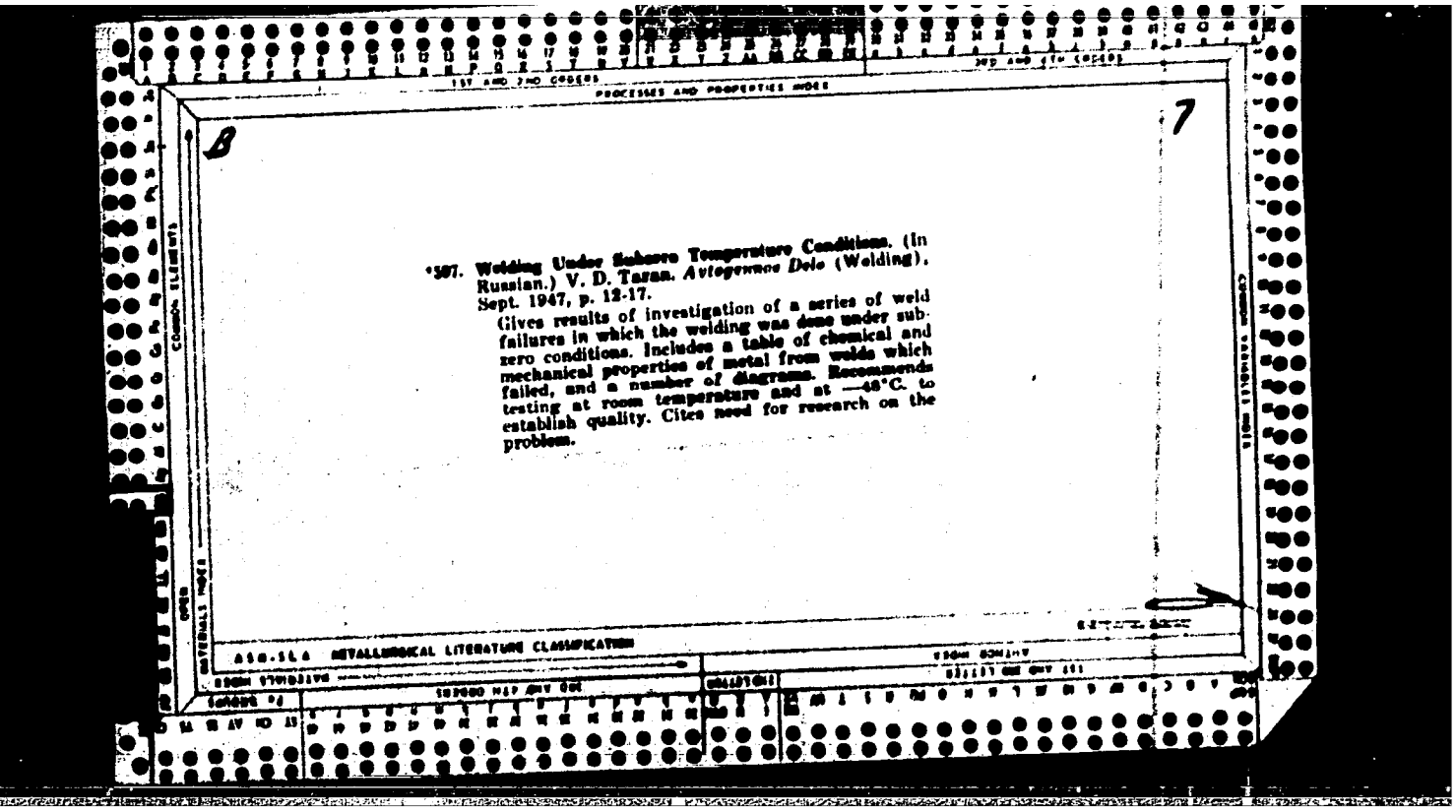


Electric Welding with Series-Fed Arcs. V. D. Taran. 9 pages. Henry Brutcher, Altadena, Calif. (Translation No. 1966.) From *Avtogennoe Delo*, v. 17, nos. 3-4, 1946, p. 16-18.

Describes an arc-welding process, both hand and automatic, that uses two series-fed arcs at the same time, boosting the operating efficiency and reducing the hardness and cracking of the affected zone.

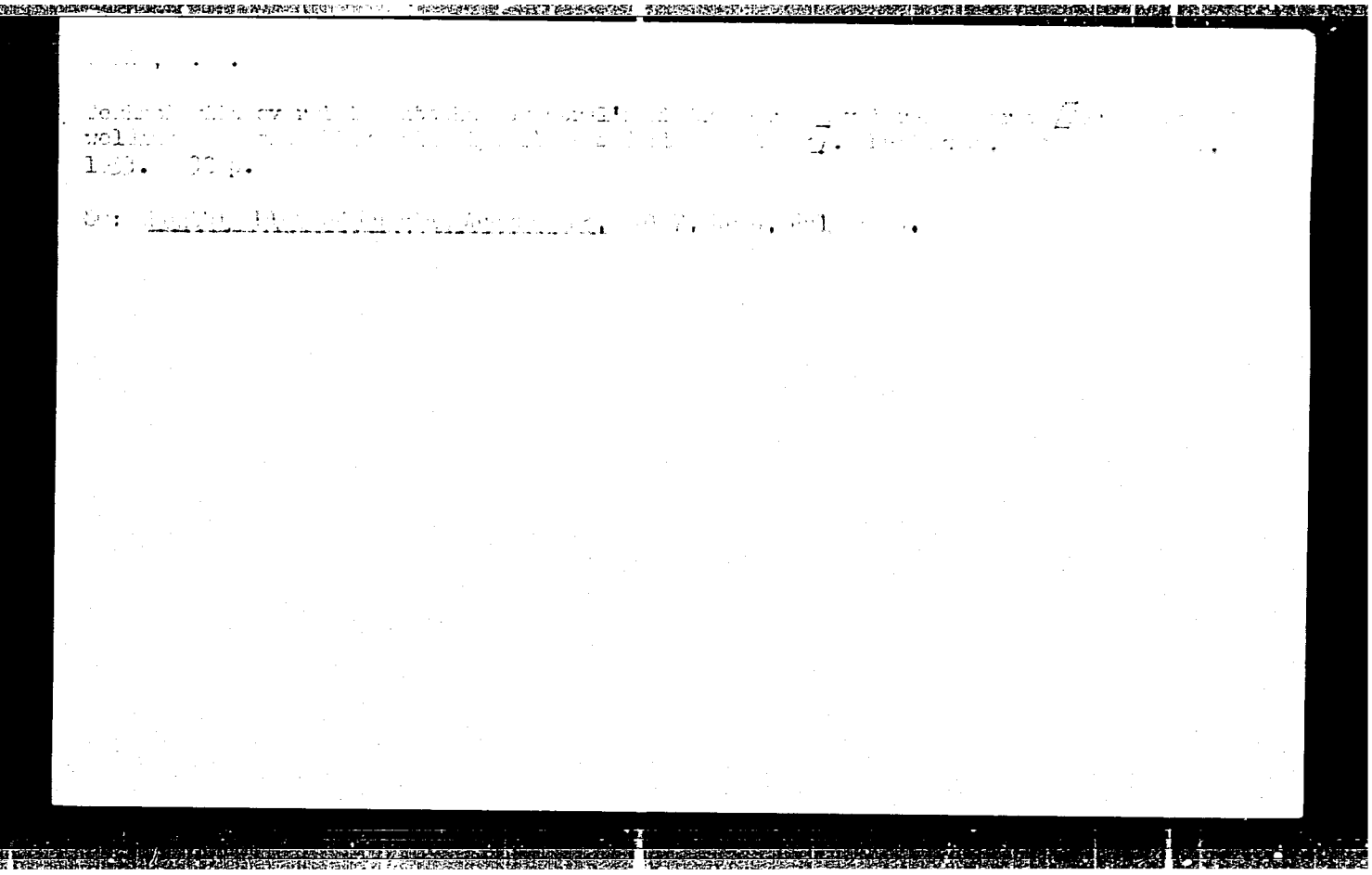


22-382. ELECTRODES WITH CELLULOSE COATING. V. D. Taran.
Avtogennoe Delo (Welding) no. 3, 1947, p. 10-13. (In Russian.)
Method of production of two new coated electrodes. The "OT-3" type (24.3% ground cellulose, 27.3% feldspar, 25.6% titanium dioxide, 10.5% magnesium oxide, 1.3% ground chalk, 5.4% potassium carbonate, and 5.6% ferro-manganese), which may be used with direct or alternating current, is highly recommended.



*507. Welding Under Subzero Temperature Conditions. (In Russian.) V. D. Taran. *Avtogennoe Delo* (Welding). Sept. 1947, p. 12-17.

Gives results of investigation of a series of weld failures in which the welding was done under subzero conditions. Includes a table of chemical and mechanical properties of metal from welds which failed, and a number of diagrams. Recommends testing at room temperature and at —40°C. to establish quality. Cites need for research on the problem.



KHIN, V.D.

3237. PROTECTION OF STEEL FROM HYDROGEN SULPHIDE CORROSION. [illegible] Y.D. Shreider, G.K. and Dankiyan, [illegible] (Trud. Nosk. Neft. Inst. (Trans. Moscow Petrol. Inst.), 1953, (12) 244-244; abstr. in Ref. Zh. Khim. (Ref. J. Chem., Moscow), 1955, (16), 56[illegible]. Samples of Soviet St.2 steel, coated with aluminium and anodized were three times as resistant to corrosion at 600°C as the same steel uncoated, and twice as resistant as the same steel with an unanodized coating.

(2)

Prof, Dr. Tech Sci

TARAN, V. D.

The Committee on Stalin Prizes (of the Council of Ministers USSR) in the fields of science and inventions announces that the following scientific works, popular scientific books, and textbooks have been submitted for competition for Stalin Prizes for the years 1952 and 1953. (Sovetskaya Kultura, Moscow, No. 22-40, 20 Feb - 3 Apr 1954)

Name	Title of Work	Nominated by
Taran, V. D.	"Technology of Welding and Assembly of Mains and Cisterns"	Moscow Petroleum Institute imeni Acad I.M. Gubkin

SO: W-30604, 7 July 1954

TARAN, V.D., doktor tekhnicheskikh nauk; POLUMINA, M.A., inzhener.

Licorice compound for testing welded seams of storage tanks for tightness. Rats. i izobr. predl. v stroi. no.13:29-31 '55.
(Tanks--Welding)
(MLRA 9:4)

TARAN, M.D., professor doktor tekhnicheskikh nauk; BEREZIN, V.L., kandidat tekhnicheskikh nauk.

Study of characteristics of electric butt welds. Strei.pred.neft.prom. 1 no.2:13-17 Ap '56. (MLRA 9:9)
(Electric welding) (Petroleum--Pipelines)

USSR / Phase Conversions in Solids. E-5

Abs Jour : Ref Zhur - Fizika, No 4, 1957, No 9284

Author : Taran, V.D., Skugorova, L.P.
Title : Rate of Growth of the Diffusion Layer When Boriding Steel.

Orig Pub : Fiz. metallov i metallovedeniye, 1956, 3, No 1, 66-69

Abstract : An investigation is made of the rate of growth of the boride layer, obtained from low-alloy structural steels 30KhGSZ, 12KhN2A, and 40Kh and carbon steel type 35. It is shown that the change in the thickness of the borided layer is in close enough agreement with the rate of growth of the diffusion layer. The heat of breakup Q and the factor B_0 ahead of the exponent, which characterize the speed of diffusion of the boron in the investigated steel, depend to a considerable extent on the chemical composition of the steel. The values of the heat of breakup and of the factor ahead

Card : 1/2

USSR / Phase Conversions in Solids. E-5

Abs Jour : Ref Zhur - Fizika, No 4, 1957, No 9284

Abstract : of the exponent are determined for the 30KhGSA, 12KhN2A, 40Kh, and 35 steels. Approximate formulas are obtained for the speed of diffusion of the born in the investigated steels as functions of the temperature.

Card : 2/2

SOV/137-57-1-[illegible]

Translation from: Referativnyy zhurnal. Metallurgiya, 1957, Nr 1, p 135 (USSR)

AUTHORS: Taran, V. D., Skugorova, L. P.

TITLE: Hardening of the Supports of Drilling Bits by Boronizing (Uprochneniye opory burovykh dolot metodom borirovaniya)

PERIODICAL: Tr. Mosk. neft. in-t, 1956, Nr 16, pp 125-134

ABSTRACT: A report on the successful employment of electrolytic boronizing (B) for hardening of the supports of drilling bits (the shank of the claw). Investigations were carried out on steels of the types 40Kh, 30KhGSA, and 12KhN2A. It is shown that the wear resistance of boronized steels is significantly greater than that of case-hardened steel. Experimental B was conducted in a bath of molten crystalline borax $N_2B_4O_7 \cdot 10\ H_2O$ in an electric crucible furnace; the anode was in the form of a carbon electrode while the article being treated served as the cathode. The optimal temperature of B of the steels investigated is 950-980°C, the current density 0.25 a/cm^2. The depth and quality of the diffusion layer are functions of the exposure time during B. The depth of the diffusion layer does not increase significantly if B is carried beyond the

Card 1/2

Hardening of the Supports of Drilling Bits by Boronizing

period of six hours; at the same time, the diffused layer becomes brittle and exhibits a tendency toward peeling.

E S

Card 2/2

TARAN, V.D., professor; SKUGOROVA, L.P.

Determining operating characteristics of drill bit pin mounts in models. Trudy MNI no.16:135-147 '56. (MLRA 9:10)

(Boring machinery)

TARAN, V. D.

"Application of Radioactive Isotopes to the Construction and Operation of Petroleum and Gas Pipelines," Utilization of Radioactive Isotopes & Emanations in the Petroleum Industry (Symposium), Min. Petroleum Industry USSR, 1957.

Results of the Joint Session of the Technical Council of Min of the Petroleum Industry USSR and Soviet Sci. and Technical Association, Moscow 14-19 Mar 1956.

TARAN, V. D.,

Taran, V. D., and L. P. Skugorova "Behaviour of a Boronized Surface Under Conditions of Dynamic-Impact "

Problems of Petroleum Production and Petroleum Engineering, Moscow, Neftyanoy institut, Gostpptekhizdat, 1957, 393pp. (Trudy vyp. 20)
This book is a collection of articles written by professors and faculty members of the Petroleum Inst. im I. M. Gubkin.

TARAN, V.D., prof., doktor tekhn.nauk; SKUGOROVA, L.P., kand.tekhn.nauk

Behavior of borated surfaces under cone bit impact loads. Trudy MNI no.20:146-153 '57. (MIRA 13:5)
(Boring machinery)

DUDA, R.I., inzhenor (Moskva); LIVSHITS, L.S., kandidat tekhnicheskikh nauk (Moskva); TARAN, V.D., doktor tekhnicheskikh nauk (Moskva); PAL'KEVICH, A.S., kandidat tekhnicheskikh nauk (Moskva).

Investigating sheet steel for reservoirs. Stroi. pred.neft.prom. 2 no.1:13-16 Ja '57. (MLRA 10:3)
(Petroleum--Storage) (Plates, Iron and steel)

TAGAN, U. D.

Distr: 4E2c

Strengthening by Boriding the Working Surface of Low Alloy Steels, V. D. Tagan and L. P. Shmygova, (Vestnik Mashinostroeniya, 1967, (8), 62-65). Experiments on three marks of steel 30 XGSA, 12XN2A and 40 X are described. Results show that the most suitable temperature for the operation is between 920 and 950° and its duration 6 h. This assures the highest resistance of the surface. Under the same conditions steel 12 X N2 A gives the best results.

659

AUTHORS: Taran, V. D., Dr. Tech. Sc. Prof. and Skugorova, L.P., Candidate of Technical Sciences.

TITLE: Surface borating of low alloy steels. (Poverkhnostnoye borirovaniye nizkolegirovannykh staley).

PERIODICAL: "Metallovedenie i Obrabotka Metallov" (Metallurgy and Metal Treatment), 1957, No.6, pp.43-47 (U.S.S.R.)

ABSTRACT: So far most Russian work on this subject (1-3) has related to borating of iron and carbon steels. Kontorovich, I. Ye and L'vovsky, M.Ya.(4) studied the influence of certain alloying elements on the formation and properties of the diffusion layer during borating. Blanter, M.Ye and Besedin, N.P.(5) studied the influence of alloying elements on the depths of penetration of the boron into the iron and the heat of formation of the diffusion layer. The aim of the here described investigations was to study the structure and the properties of the borated layer obtained on several low alloy structural steels. Standard specimens of the low alloy steels 12ХН2А, 12ХН3А, 30ХГСА, 55С2А, 40Х, and for comparison specimens of the carbon Steel 35, were used, the analyses of which are given in Table 1, p.43. The thermochemical treatment was effected in an electrolytic bath of molten borax, the specimens being used as cathodes, inside stainless steel crucibles with a

Card 1/3

current density of 0.20 to 0.25 A/cm^2. The influence is discussed of the anode material, of the bath temperature, of the process of duration and of the chemical composition of the steel on the depth of the borated layer. The structure and the hardness of the borated layer are also discussed. The authors conclude that the quality of the borated layer forming on the investigated steels depends on the temperature of the electrolytic bath during the process and on the duration of the process; if the duration exceeds six hours and the bath temperature exceeds 950 C, the borated layer will become brittle. On the basis of microstructural analysis the optimum technological regime of electrolytic borating of the investigated steels is 950 C with a duration of six hours. The hardness of the borated layer is higher for the investigated low alloy steels than it is for the carbon Steel 35. The microhardness of the surface phase of some of the investigated borated low alloy steel specimens reached up to 2500 kg/mm^2. Fig.1 shows the general arrangement of the test set-up; the graph, Fig.2, shows the dependence of the thickness of the borated layer on the bath temperature for a process duration of four hours; microphotos, Figs.3-6 show the structure of the borated layer of three low

Surface borating of low alloys steels. (Cont.)

alloy steels and of one carbon steel. 6 figures, 2 tables and 6 Slavic references.

ASSOCIATION: Moscow Oil Institute imeni I. M. Gubkin. (Moskovskiy Neftyanoy Institut imeni I.M.Gubkina).

AVAILABLE:

Card 3/3

DUDA, R.I.; TARAN, V.D.; FAL'KEVICH, A.S.; LIVSHITS, L.S.

High-level capacity of steel tanks in the winter. Neft.khoz. 35 no.2:51-56 F '57. (MLRA 10:3)
(Petroleum--Storage)

AUTHORS: Taran, V.D. (Dr.Tech.Sc., Professor) and Skugorova, L.P., (Cand.Tech.Sc.)

TITLE: The Hardening of Rubbing Surfaces in Low Alloy Steels by Boron Treatment. (Uprochneniye borirovaniyem trushchikhsya poverkhnostey nizkolegirovannykh staley)

PERIODICAL: Vestnik Mashinostroyeniya, 1957, 37 Nr 5, pp.62-65 (USSR)

ABSTRACT: The known information on boron treatment is briefly reviewed. A Vickers hardness of 2000 is achieved at the surface, maintained even after repeated heating to 950°C. Resistance against acids and heat resistance up to 800°C are claimed. A wear resistance exceeding that of nitrided surfaces has been observed. A study of electrolytic boron treatment is reported. After melting of borax ($Na_2B_4O_7$), in a stainless steel crucible, a carbon (or graphite) anode and the workpiece cathode are immersed in the bath. The electrochemical processes are discussed resulting in the formation of boron which diffuses into the metal producing iron borides, boron carbides and oxygen escaping into atmosphere. The authors have established that the boron enriched layer grows with a rise in temperature up to 950°C. Relations between thickness and exposure are given. Beyond eight hours'

122-5-22/35

The Hardening of Rubbing Surfaces in Low Alloy Steels by Boron Treatment.

exposure a sharp increase in brittleness is observed. Wear tests were set-up in a lathe. A specimen was fixed to the tail stock and burnished by rollers of 10 mm diameter, 20 mm length, 150 rpm under 20 kg load. A cam device produced periodic impacts with a total energy of 8400 kgcm per minute. Specimens with about 1% chromium were tested (namely: steel 30ХГСА with 0.25% C, 0.99% Mn and 1.05% Si, steel 12ХН2А with 0.15% C, 0.44% Mn and about 2% Ni, and steel 400Х with 0.42% C, 0.69% Mn and 0.25% Si). The wear resistance was judged by the loss of weight measured at 15 minute intervals. Comparison of wear graphs (reproduced) showing variations of steel composition, treatment temperature and treatment duration shows that the best treatment temperature is 920-950°C, the best exposure six hours and the best steel composition is the low carbon, Ni-Cr steel, 12ХН2А.
There are 5 figures, comprising 4 graphs and 2 tables, and 6 Slavic references.

AVAILABLE: Library of Congress.

Card 2/2

KUZMAK, Ye.M., prof. doktor tekhn. nauk, red.; TARAN, V.D., prof., doktor tekhn. nauk, red.; ZHIGACH, K.F., prof., red.; MURAV'YEV, I.M., prof., red.; TIKHOMIROV, A.A., kand. ekon. nauk, red.; YEGOROV, V.I., kand. ekon. nauk, red.; CHARYGIN, M.M., prof., red.; DUNAYEV, P.P., prof., red.; CHERNOZHUKOV, N.I., prof., red.; CHARNYY, I.A., prof., red.; PANCHENKOV, G.M., prof., red.; DAKHNOV, V.N., prof., NAMETKIN, N.S., doktor khim. nauk, red.; ALMAZOV, N.A., dots., VINOGRADOV, V.N., kand. tekhn. nauk, red.; BIRYUKOV, V.I., kand. tekhn. nauk, red.; TAGIYEV, E.I., red.; GUREVICH, V.M., red.; GOR'KOVA, A.A., ved. red.; FEDOTOVA, I.G., tekhn. red.

[Proceedings of the conference of technical schools on the problems of new equipment for the petroleum industry] Mezhvuzovskoe soveshchanie po voprosam novoi tekhniki v neftianoi promyshlennosti. 1958. materialy... Moskva, Gos. nauchno-tekhn. izd-vo neft. i gorno-toplivnoi lit-ry. Vol. 3. [Manufacture of petroleum industry equipment] Neftianoe mashinostroenie. 1958. 222 p. (MIRA 11:11)
(Petroleum industry--Equipment and supplies)

TARAN, V.D.; SKUGOROVA, L.P.

Testing the durability of borated race ways of roller bit supporting shanks. Izv. vys. ucheb. zav.; neft' i gaz no.2:113-118 '58.
(MIRA 11:8)

1. Moskovskiy neftyanoy institut im. akad. I.M. Gubkina.
(Boring machinery)

SOV/137-58-10-21616

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 10, p 166 (USSR)

AUTHORS: Taran, V.D., Lipilin, I.P.

TITLE: Investigation and Selection of Novel Types of Steel for Drilling Bits (Issledovaniye i vybor novykh staley dlya burovykh dolot)

PERIODICAL: Materialy Mezhvuz. nauchn. soveshchaniya po vopr. novoy tekhn. v neft. prom-sti, 1958, Vol 3, pp 97-110

ABSTRACT: Research was performed on novel types of high-strength steel containing no expensive or scarce alloying elements. Two groups of steel were tested: 1) Steels containing 0.15-0.35% C (18KhGT, 20Kh, 20KhNZ, 30KhGS); 2) steels containing 0.28-0.55% C (30KhGS, 40KhN, 50KhGS). Investigations were carried out on specimens the size and shape of which corresponded to the cutting teeth in the central jaws (rollers) of a ZK-12 drilling bit. The specimens were subjected to impact tests as well as tests on impact wear. Best results were achieved with steels 20KhNZ and 30KhGS. Since steel 30KhGS does not contain any scarce elements, it was adopted for manufacture of drilling bits. After quenching and tempering operations at temperatures of 880°C and 250°C, respectively, the steel

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Investigation and Selection of Novel Types of Steel for Drilling Bits

30KhGS possesses a σ_b of 185 kg/mm^2, a σ_s of 179 kg/mm^2, and an a_k of 8.3 kgm/cm^2. The structure of a carburized layer of steel 30KhGS is normal, i.e., it does not contain any carbide network and is free of large carbide inclusions. Laboratory and shop tests revealed the advantages of steel 30KhGS over the steels 18KhGT and 12KhN2. The authors emphasize the need for further research on methods of heat treatment of jaws made of 30KhGS steel.

I.B.

1. Drills--Materials 2. Steel--Applications 3. Steel--Properties
4. Drilling machines--Equipment

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SOV/137-58-9-19411

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 9, p 181 (USSR)

AUTHORS: Taran, V.D., Skugorova, L.P.

TITLE: Boriding as a Method for Toughening the Bearings of Milling-machine Cutters (Borirovaniye kak sposob uprochneniya opory sharoshechnykh dolot)

PERIODICAL: Materialy Mezhvuz. nauchn. soveshchaniya po vopr. novoy tekhn. v neft. prom-sti, 1958, Vol 3, pp 156-163

ABSTRACT: Investigation of the effect of the fundamental factors of the process of boriding (B) (anode material, composition of the bath, temperature, duration of B, and chemical composition of the material) on the thickness and quality of the borided layer (BL) and also of the microstructure and hardness of BL was conducted on 12KhN2A, 12KhN3A, 30KhGSA, 40Kh, 35S2A, and St. 35 grades of steel. B was carried out at 850, 950, 1000, and 1100°C for durations of 4, 6, 8, and 12 hours. It was discovered that BL increases considerably upon an increase of temperature only up to 950-1000°; at more elevated temperatures BL becomes brittle. The BL of 30KhGSA-grade

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Boriding as a Method for Toughening the Bearings of Milling-machine (cont.)

steel is the thickest, that of 40Kh-grade steel the thinnest. The typical structure of the BL of the structural steels investigated (B at 950° for 4 hours) consists of acicular dendrite crystals oriented perpendicularly to the surface of the specimen. By means of testing on the stand of the working properties of BL on specimen-models applicable to the working conditions of a large roller race of the bearing for a triple milling cutter, the optimum conditions for B were established: Temperature 920-950°, soaking 6 hours. The wear resistance of borided specimens is 60% higher than that of the carburized ones and 12 times higher than the wear resistance of quenched specimens. It is recommended that the bearings of drilling cutters be borided to increase the strength of the friction surfaces.

1. Machine tools--Equipment 2. Bearings--Processing 3. Metal coatings --Applications 4. Borides

A.B.

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SOV-1[illegible]-11-5[illegible]

AUTHORS: Taran, V.D., Doctor of Technical Sciences, Professor; Potritskiy, N.V., Engineer; Fal'kevich, A.S., Candidate of Technical Sciences, and Neyfel'd, I.Ye., Engineer

TITLE: An Investigation of Pipe Pressure-Welding Process (Issledovaniye protsessa pressovoy svarki trub)

PERIODICAL: Svarochnoye proizvodstvo, 1958, Nr 11, pp 12-14 (USSR)

ABSTRACT: There is no exact information available on the processes of seam formation in the pressure welding of pipe butts. VNIIST carried out experiments together with the Chair of Metal Study of the Moscow Oil Institute imeni I.M. Gubkin, relating to the study of the pressure welding process under a plastic condition with the use of radioactive isotopes. "Marked atoms" were used to determine the correctness of one of the two existing hypotheses on the formation of weld joints, and to solve the problem of iron-atom diffusion and changes of properties in weld joints by subsequent heat treatment. Microautoradiography was used to investigate the diffusion processes in metal. The following conclusions are made:

Card 1/2 1) The penetration of grains through the border dividing the

An Investigation of Pipe Pressure-Welding Process

parts being welded does not take place. 2) Weld joints have a non-diffusion character and common grains on the border are formed by the drawing together of surface grain atoms. 3) Subsequent heat treatment of pressure-welded low-carbon steel proved inefficient. Further investigation on the use of other radioactive isotopes in the pressure-welding process is recommended.

There are 2 tables, 1 graph, 2 diagrams, 3 sets of microphotos and 7 references, 2 of which are English and 5 Soviet.

ASSOCIATIONS: Moskovskiy neftyanoy institut (Moscow Petroleum Institute)
VNIIST Glavgaza SSSR (VNIIST of Glavgaz USSR)

1. Pipes—Welding 2. Metals—Diffusion 3. Radioisotopes—Applications 4. Welds—Autoradiography

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TARAN, V.D., prof., doktor tekhn.nauk; SHREYBER, G.K., dotsent, kand. tekhn.nauk; SKUGOROVA, L.P., kand.tekhn.nauk; SAAKIYAN, L.S., assistent, kand.tekhn.nauk; DUDA-ZAKSON, R.I., kand.tekhn.nauk; POLFEROV, A.P., inzh., starshiy prepodavatel'.

[Studying the materials used in the petroleum industry] Neftianoe materialovedenie. Pod obshchei red. V.D.Tarana. Moskva, Mosk. in-t neftekhim. i gazovoi promyshl. Pt.1. [Steel and cast iron] Stali i chuguny. 1959. 179 p. (MIRA 13:1)
(Steel) (Cast iron)

TARAN, Vladimir Demidovich, prof., doktor tekhn.nauk; SHAKHMAYEVA, Ye.A., vedushchiy red.; FEDOTOVA, I.G., tekhn.red.

[Techniques of welding and assembling pipelines] Tekhnologiia svarki i montazha magistral'nykh truboprovodov. Moskva, Gos. nauchno-tekhn.izd-vo neft. i gorno-toplivnoi lit-ry, 1960. 361 p. (MIRA 13:3)

(Pipelines)

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SOV/129-60-1-1/22

AUTHORS: Taran, V. D. (Doctor of Technical Sciences, Professor), Skugorova, L. P. (Candidate of Technical Sciences)

TITLE: Boronating Steel With Galvanic Coating

PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov, 1960, Nr 1, pp 2-5 (USSR)

ABSTRACT: The authors investigate the effects of boronating nickel- and copper-coated steel. It is known that boron does not dissolve in nickel and merely forms borides, while no data are available on the interaction of boron and copper. Sequence of tests: 15 mm high steel 35 and 50 specimens (0.35 and 0.50% C, respectively) with 10 and 15 mm diam were used. (1) Nickel-plated specimens were boronated at 950 to 960° C for 60, 90, and 120 min, as well as for 4 hours. Microstructural analysis revealed that the nickel layer did not impede the penetration of boron. The boronated layer of nickel-plated specimens was found to have the same structure as in regular steel specimens. The authors assume this to be a result of

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Boronating Steel With Galvanic Coating

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the reaction between elementary boron and nickel, which leads to the formation of an integral diffusion layer. Microhardness of the boronated layer measured with a 100 g load exceeded 1,500 kg/mm^2. The wide range of changes in the microhardness of tested specimens testifies to the inhomogeneity of the boronated layer. Increases in the thickness of the nickel layer (0.008 to 0.036 mm) failed to produce a heavier boronating layer. (2) Copper-plating was carried out in H_2SO_4 electrolyte. Microstructural analysis revealed the absence of any reaction between elementary boron and the copper layer. The latter impedes the penetration of boron. Occasional penetration is due to inadequate Cu-layer thickness or the presence of cracking and other imperfections. The authors found that a copper layer with maximum thickness of 0.10 mm leads to the formation of a considerably thinner boron sublayer. Microhardness of the sublayer varied from 1,000 to 1,600 kg/mm^2, and that of the copper layer from 80 to 140 kg/mm^2. Boronating had no effect on the hardness of

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the copper layer. The depth of penetration of boron into steel 50, as it depends on the thickness of the copper layer during boronating for 2 hours at 950 to 960° C, is shown in Fig. 5.

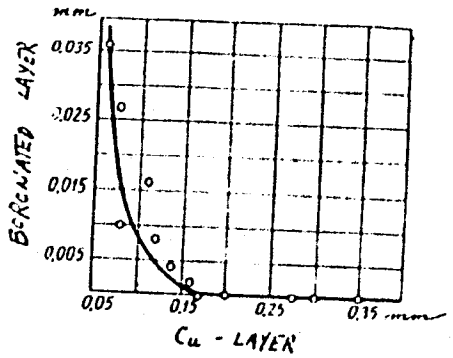

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Fig. 5. Relationship curve of the depth of B penetration into steel 50 on the thickness of Cu—layer.

Boronating Steel With Galvanic Coating

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Boron diffusion was completely arrested by increases in the thickness of the copper layer (over 0.1 mm). In recommending the use of galvanic copper-plating as a local protection during boronating, the authors emphasize the importance of having an adequately heavy sound copper layer. The boronating of Cu-Zn and Cu-Sn alloys revealed neither brass nor bronze to be susceptible to boronating. There are 7 figures; 1 table; and 6 Soviet references.

ASSOCIATION: Moscow Petroleum Institute imeni I. M. Gubkin, Academician (Moskovskiy neftyanoy institut imeni Akad. I. M. Gubkina)

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S/123/[illegible]
A005/A001

Translation from: Referativnyy zhurnal, Mashinostroyeniya, 1960, No. 24, p. 641, # 137250

AUTHORS: Taran, V.D., Saakiyan, L.S.

TITLE: The Effect of the Grain Size on the Corrosion Resistance of an Anodized Surface

PERIODICAL: Tr. Mosk.in-ta neftekhim. i gaz. prom-sti, 1960, No.28, pp. 174-178

TEXT: The authors report on investigations conducted by the Moskovskiy Institut Neftekhimii i gazovoy promyshlennosti (МИНХ и ГП) (Moscow Institute of Petroleum Chemistry and Gas Industry, MINKh and GP). It turned out that the natural corrosion resistance of aluminum in sulfurous petroleum and petroleum products can be considerably increased by anodizing, which consists in a relatively simple electrochemical treatment of its surface being covered with an oxide layer. The investigation results showed that the resistance of the anodized aluminum in a hydrogen sulfide medium at 300 and 500°C was not inferior to that of stainless steel. By choosing the appropriate parameters of anodizing, a layer of various

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